June 2003 DHEC site inspection report: Whitestone

This inspection was conducted as part of the USEPA assessment under Superfund.

It's the conclusions in this report that resulted in the USEPA concluding that no further action was required.

Report has good site history, analytical results, etc,.

SITE INSPECTION

Whitestone Drum Site

SC0 001 238 328

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I. SCOPE OF WORK

Under authority of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) and the Superfund Amendments and Reauthorization Act of 1986 (SARA), the Site Assessment Section of the South Carolina Department of Health and Environmental Control (SCDHEC) conducted a Site Inspection at the Whitestone Drum Site in Spartanburg and Union Counties, SC. The scope of this investigation included a review of available file information, site reconnaissance, sampling trip, and a target survey. As part of this investigation, environmental samples were collected from the site and surrounding area. The surface water and soil exposure pathways were evaluated during this study. Waste samples were also collected at the site. The objectives of this investigation were to address possible impacts to public health and the environment as well as determine the need for further assessment or possible remediation activities.

II. INTRODUCTION

The Whitestone Drum Site is located at the intersection of SC Hwy 150 and Whitestone Road. The 254-acre site is currently a timber plot that received an unpermitted dumping of several hundred 55-gallon drums. The contents of the drums are unknown. Domestic dumping has also occurred at the site. A hunting club leases the property for hunting. Evidence indicated that trespassers also use the site for hunting and unpermitted dumping of domestic waste. The U.S. Environmental Protection Agency has collected samples from the site in 1993, 1996, and 2002. Analytical results indicate levels of arsenic, lead, pesticides, and PCBs above Superfund Chemical Data Matrix's (SCDM) Health Based Benchmarks for soil.

SCDHEC conducted environmental sampling at the site on February 12, 2003. Concentrations of arsenic and lead were found in sediment above control levels. Soil samples contained elevated levels of several metals and PCBs. Samples of exposed waste contained concentrations of metals and PCBs above SCDM Health Based Benchmarks for soil. The site is in a remote area, with few environmental and human health targets associated with it. The Whitestone Drum Site is given a low priority for further action under the Federal Superfund Program. The site will be referred to the State Superfund program for evaluation.

III. SITE HISTORY

A. Site Description

The Whitestone Drum Site is located at the intersection of SC Hwy 150 and Whitestone Road. The site lies on the boundary of Spartanburg and Union Counties. The site is bordered to the north by SC Highway 150. Kennedy Creek is the site's eastern boundary. The site is bordered to the south, and west by forested areas (Refs. 1,2). The 254-acre timber plot is owned by Bowater, Inc. Bowater purchased the property in 1960 (Ref. 3). Prior to Bowater's ownership the site was reported to be a pig farm (Ref.4). The site is a predominately a timber tract consisting of pine trees. A high voltage power line crosses the property (Figs 1, 2).

An unknown quantity of 55-gallon drums were disposed of at the site. The drums are primarily concentrated in three areas: a gully approximately 300 feet from the site's entrance at Highway 150 (Area 1); an area paralleling an access road, north of the power line (Area 2); and an area south of the power line (Area 3). All of the drums were rusted and in varying states of decay. The contents of the drums and the date(s) of disposal are not known.

An area opposite the access road from Area 2 has been used as an unregulated dump. The composition of the debris is a mixture of household, textile, and industrial, waste. Judging by the amount and size of the vegetation around the dump area, the surficial dumping apparently occurred a number of years ago. The size of the dump is approximately 2800 sq. ft (Ref. 3).

B. Process and Waste Disposal History

There is no documentation available concerning the disposal of the drums or other wastes while the dumping activities occurred. The site was used for unpermitted waste disposal for an unknown period of time. The 55-gallon drums in Area 1 were apparently dumped into a gully at the mouth of what appears to be a spring. Waste in the domestic waste pile, Area 2, and Area 3 were apparently surficially dumped along the site's access roads and power line right-of-ways. Since these areas were unregulated, no engineering controls are in place.

IV. FIELD INVESTIGATIONS

A. Previous Field Activities

The USEPA Emergency Response and Removal Branch (ERRB) conducted assessments at the site in 1993, 1996, and 2002 (Refs 5,6,7).

In 1993 ERRB conducted a Emergency Removal Assessment of the site. The sampling event indicated elevated levels of VOCs, Semi-VOCs, metals, and pesticides in soil samples collected at site. Arsenic, lead, aldrin and dieldrin were found at concentrations that exceeded SCDM benchmarks for soil (Ref 5).

An SCDHEC Preliminary Assessment of the site was conducted in 1996. SCDHEC considered the site a "low" priority for further CERCLA investigation and referred the site to ERRB (Ref. 8). ERRB returned to conduct a Site Investigation of the site in June 1996. ERRB collected three composite soil samples. The soil samples did not indicate elevated levels of metals, volatiles (VOCs), semi-volatiles, or pesticides. Sampling did detect twenty (20) VOC "Tentatively Identified Compounds" (TICs). However, the composition and concentrations of the TICs were not determined (Ref. 6).

SCDHEC conducted a file review of the site in 2001. A subsequent site visit indicated that the site was significantly larger that initially believed. SCDHEC requested that ERRB conduct another assessment of the site. ERRB collected three composite and one grab sample at the site on February 27, 2002. All soil samples contained concentrations of arsenic and iron above the EPA Region 9's Preliminary Remediation Goals (PRGs). Lead (1600 ppm) and PCBs (360 ppb), were also detected above PRGs. No constituents detected exceeded removal action levels. ERRB determined that the site did not warrant a time critical removal and recommended no further action (Ref. 7).

Waste samples were not collected during any previous sampling event.

B. Current Activities

As part of this investigation, SCDHEC conducted its operations in two phases: a site reconnaissance and environmental sampling. A site reconnaissance occurred on January 6, 2003. Site features were similar to reports from previous site visits. However it was evident that the number of drums that were reported (60-200) was significantly underestimated (Ref. 8). Initial examination during the reconnaissance estimated that the number of drums was in the hundreds.

Environmental sampling activities were conducted at the site on February 12, 2003 (Ref. 20). Six (6) waste samples, three (3) surface soil, three (3) surface water, and three (3) sediment samples were collected. Sampling locations are shown on Figure 3. Sample results are discussed in the following sections.

V. WASTE EVALUATION

Waste samples have been previously not collected at the site. To further evaluate potential waste sources, six (6) waste samples were collected at the site. Sampling locations are shown on Figure 3. Sample results are shown in Table 1.

WD-010-WA contained concentrations of xylenes at 3,000,000 µg/kg and isopropylbenzene at 2,800,00 µg/kg (Ref. 9).

WD-011-WA contained high concentrations of arsenic (8.1 mg/kg), chromium (31000 mg/kg), and lead (93000J mg/kg) (Ref. 9).

WD-012-WA contained arsenic (7 mg/kg) (Ref. 9).

WD-013-WA contained arsenic (2.7 mg/kg), methyl butyl ketone (410J µg/kg), methyl acetate (35000 µg/kg), methylene chloride (2200 µg/kg), and xylenes (2200 µg/kg) (Ref. 9).

WD-014-WA contained arsenic (7.4 mg/kg) (Ref. 9).

WD-015-WA contained arsenic (6.1J mg/kg), mercury (0.18 mg/kg), and PCB 1254 (3.1 mg/kg) (Ref. 9).

VI. GROUNDWATER PATHWAY

A. Regional Hydrogeology

A hydrogeologic review of the site has been conducted. The purpose of the hydrogeologic review is to provide information regarding the groundwater migration route of potential contaminants. It includes information obtained from South Carolina Water Resources Commission (SCWRC) well tabulations, USDA soil surveys, site specific information from SCDHEC files, USGS topographic quadrangles, and a geologic / hydrogeologic literature review.

According to the SCWRC Administrative Report #16 dated August 1983, the following geologic units underline the site:

Name	Description	Est. Hydraulic Conductivity	Occurrence
Saprolite	Hetergeneous Mixture of sand, silt, and clay	10e-4 cm/sec	0 – 40 ft.
Bedrock	Crystalline Igneous and metamorphic rock	10e-2 – 10e-8 cm/sec	Below Saprolite

The aquifers within these geologic units are hydraulically connected an act as a single hydrologic unit. The site is not in an area of karst topography (Ref. 10).

Based on topographic relief and the elevation of local discharge features (streams and ponds), the depth to groundwater is estimated to be between 80 and 100 feet below ground surface. The predominant shallow groundwater flow direction appears to be to the southeast toward Kennedy and Cunningham Creeks and to the southwest towards a tributary of Fairforest Creek (Ref. 10).

Drum Area 1 is possibly located at the mouth of a spring. The area contained standing water during each site visit. The water apparently returns underground and remerges on the opposite

Runoff from Drum Area 2, Drum Area 3, and the Mixed Waste Area travels approximately 0.5 miles and enters an unnamed 1st order stream. From here, the stream flows approximately 0.25 miles where it enters Kennedy Creek. Kennedy creek has a flow rate of 6.1 cfs (Ref. 14) Kennedy Creek flows approximately 1.8 miles and joins Fairforest Creek. The TDL ends in Fairforest Creek (Ref. 1).

B. Surface Water Use

Both Fairforest Creek and Kennedy Creeks are fisheries (Refs. 14, 15). There is an estimated 0.3 miles of wetlands frontage on Fairforest Creek, approximately 1 mile downstream of Area 1's Probable Point of Entry (PPE) (Ref. 8). No drinking water intakes or habitat for Federal or state endangered or threatened species are present within the TDL (Ref. 16).

C. Surface Water Impact

Three (3) surface water and three (3) sediment samples were collected from the area of standing water at Area 1. Sampling locations are shown on Figure 3. Sampling results are shown in Tables 3 and 4. The area is assumed to be a spring. Therefore, no suitable control sample could be collected for the surface water samples. Since the area is not a perennial flowing surface water body, the sediment samples were compared to the control surface soil sample.

Surface water sample WD-003-SW contained concentrations of arsenic at 16 µg/l and lead at 35 µg/l. Sample WD-002-SW showed small concentrations of several poly aromatic hydrocarbons (PAHs) (Ref. 9).

All three sediment samples contained elevated concentrations (greater than three times control levels) of arsenic. PCB 1254 was found in sediment samples WD-001-SD (estimated 70 µg/kg) and WD-002-SD (98 µg/kg) (Ref. 9).

IX. AIR PATHWAY

The Air Pathway is not expected to be a significant risk factor for the site at this time. Evaluation of the Air Pathway was not conducted.

X. CONCLUSIONS AND RECOMENDATIONS

The Whitestone Drum Site is located at the intersection of SC Hwy 150 and Whitestone Road. The 254-acre site is currently a timber plot that received an unpermitted dumping of several hundred 55-gallon drums with unknown contents. The U.S. Environmental Protection Agency has collected samples from the site in 1993, 1996, and 2002. Analytical results indicate levels of arsenic, lead, pesticides, and PCBs above SCDM Health Based Benchmarks for soil. SCDHEC conducted environmental sampling at the site on February 12, 2003. Concentrations of arsenic and lead were found in sediment above control levels. Soil samples contained elevated levels of several metals and PCBs. Samples of exposed waste contained concentrations of metals and PCBs above SCDM Health Based Benchmarks for soil.

Media sampling suggests that a release has occurred at the site. However, the site is in a remote area, with few environmental and human health targets associated with it. The Whitestone Drum Site is given a low priority for further action under the Federal Superfund Program. The site will be referred to the State Superfund program for evaluation.

XI. REFERENCES

1. United States Geologic Survey Topographical Maps

Glenn Springs, SC	7.5 min.	1983
Jonesville, SC	7.5 min	1969
Pacolet, SC	7.5 min.	1983
Pacolet Mills, SC	7.5 min.	1969

(Available in the Site Assessment Section)

2. United Stated Geologic Survey. Historical Aerial Photographs of Spartanburg and Union Counties, SC. University of South Carolina Map Archive. (Available at the USC Library).

3. Maynard, Ben. - SCDHEC. Record of communication with Mike Willis regarding the Whitestone Drum Site. February 28, 1996.

4. Logbook. CERCLA FILE: Whitestone Site. February 2003.

5. MacLaren, Paula C. - Weston. Memorandum to file, and accompanying analytical data and file notes for activities at Whitestone Drum Site. September 14, 1993.

6. Yount, Samuel - START. Memorandum to Terry Stillman, USEPA. Whitestone Drum Site Investigation. TDD No. 04-9605-0040. July 24, 1996

7. Meisenheimer, Kevin - USEPA ERRB. RAT Polrep, Whitestone Drum Site. September 20, 2002.

8. SCDHEC. Preliminary Assessment, Whitestone Drum Site SC0 001 238 328. March 29, 1996.

9. USEPA – Science and Ecosystem Support Division. Sample Analysis for Whitestone Drum Site. April 2003.

10. Feagin, Marion - SCDHEC. Memorandum to Ben Maynard, SCDHEC. Whitestone Drum Preliminary Assessment - Hydrogeologic Review. March 26, 1996.

11. United States Federal Register. 40 CFR Part 300. Hazard Ranking System, Final Rule. December 14, 1990. (Available in the Site Assessment Section).

12. National Flood Insurance Program. Flood Zone Map. Spartanburg County, Community Panel Number 450176 0200 B. Union County, Community Panel Number 4501850025 B. (Available in the Site Assessment Section).

13. South Carolina Water Resources Commission, State Climatologist. South Carolina State Water Assessment, SCWRC Report No. 140. September 1983. (Available in the Site Assessment Section).

14. Rankin, Dan - SCDNR. Facsimile Transmission to Jason Williams, SCHEC. Kennedy Creek Fish Sample. October 16, 2002.

15. Maynard, Ben – SCDHEC. Record of Communication with Mike Willis regarding the Whitestone Drum Site. March 25, 1996.

16. SCDHEC Bureau of Solid and Hazardous Waste Management. Printout detailing surface water use, endangered species, and groundwater use near the Whitestone Drum Site. From February 1992 data.

17. SCDHEC Bureau of Land and Waste Management, Site Assessment Section. Site Inspection Sampling Photographs. February 12, 2003. (Available in the Site Assessment Section).

18. Maynard, Ben – SCDHEC. Record of Communication with Jim Potts, Bowater Carolina Corporation. Regarding the Bowater Property at Whitestone Road and Highway 150. March 27, 1996.

19. USEPA. Superfund Chemical Data Matrix. 1996. (Available in the Site Assessment Section)

20. SCDHEC – BLWM. Sampling Plan. Site Inspection, Whitestone Drum Site. (Copy Attached)

XII. TABLES AND FIGURES

Table 1. Summary of Analytical Results for Waste Sampling at Whitestone Drum Site

		WD-010-WA	WD-011-WA	WD-012-WA	WD-013-WA	WD-014-WA	WD-015-WA
	ALUMINIUM	650	980	15000	41	80	7800
	ANTIMONY	UJ	UJ	R	UJ	R	18J
	ARSENIC	U	8.1	7	2.7	7.4	6.1J
	BARIUM	U	23	140	U	U	710
	BERYLLIUM	U	UJ	U	U	U	U
	CADMIUM	U	43	U	U	U	210
	CALCIUM	3900	18000	2200	U	65	50000
	CHROMIUM	U	31000	46	6.1	11	28
	COBALT	U	53	10	U	5.1	4.7
	COPPER	20J	2.4J	870J	5.1J	28J	240J
	IRON	20000	1700	78000	18000	57000	42000
	LEAD	16J	93000J	120J	27J	14J	550J
	MAGNESIUM	790	12000	1500	U	U	1300
	MANGANESE		80	800	34	77	300
mg/kg	TOTAL MERCURY	U	U	U	U	U	0.18
	NICKEL	R	R	32	2.2	9.7	16
	POTASSIUM	2100	150	1700	49	83	510
	SELENIUM	R	U	2.9	2.8J	3J	1.7
	SILVER	R	0.83	1.7	0.49	1.2	1.6
	SODIUM	36000	U	360	220	550	390
	VANADIUM	U	U	36	U	U	U
	ZINC	1600	33000	270	2000	14	820
	TRICHLOROFLUOROMETHANE	U	U	8J	U	U	U
	METHYL BUTYL KETONE	U	U	U	410J	U	U
	METHYL ACETATE	U	U	U	35000	U	U
ug/kg	METHYLENE CHLORIDE	U	U	U	2200	U	U
	TOTAL XYLENES	3000000	U	U	2200	U	U
	ISOPROPYLBENZENE	2800000	U	U	U	U	U
mg/kg	BIS(2-ETHYLHEXYL)PHTHALATE	U	U	U	U	U	15000
mg/kg	PCB 1254	U	U	U	U	U	3.1

U- Not detected

J- Estimated value

R- Concentration can not be determined due to QC problems. Data are rejected and considered unusable

Table 2. HRS Population Ranges for Residents within Four Miles of Whitestone Drum

RADIUS (MILES)	POPULATION SERVED (PRIVATE)
0 - 0.25	1 - 31
0.25 - 0.5	1 - 31
0.5 - 1	31 - 100
1 - 2	101 - 300
2 – 3	101 - 300
3 - 4	101 - 300

Table 3. Summary of Analyical Results for Surface Water Sampling at Whitestone Drum Site

		WD-001-SW	WD-002-SW	WD-003-SW
ug/l	ARSENIC	R	U	16
	BARIUM	50	48	49
	COBALT	72	36	160
	LEAD	11	R	35
ug/l	2-METHYLNAPHTHALENE	U	2J	U
	ACENAPHTHENE	U	2J	U
	DIBENZOFURAN	U	2J	U
	FLUORENE	U	2J	U
	CARBAZOLE	U	1J	U

U- Not detected

J- Estimated value

N- Presumptive evidence material is present;reported as tentative identification

R- Concentration cannot be determined due to QC problems.Data are rejected and considered unusable

Table 4. Summary of Analyical Results for Sediment Sampling at Whitestone Drum Site

		WD-004-SF (CONTROL)	WD-001-SD	WD-002-SD	WD-003-SD
mg/kg	ARSENIC	1.5	**7.9**	**4.5**	**3.9**
	BARIUM	75	100	64	120
	CHROMIUM	43	98	93	74
	LEAD	15J	76J	41J	20J
ug/kg	BIS(2-ETHYLHEXYL)PHTHALATE	U	U	U	2200J
ug/kg	PCB 1254	U	70J	98	U

Bold numbers indicates elevated levels (> 3X control levels)

U- Not detected

J- Estimated value

Table 5. Summary of Analytical Results for Soil Sampling at Whitestone Drum Site

		WD-004-SF (CONTROL)	WD-006-SF	WD-008-SF
mg/kg	ALUMINIUM	8200	**28000**	13000
	ANTIMONY	UJ	UJ	2.9J
	ARSENIC	1.5	**5.5**	**12**
	BARIUM	75	78	180
	CALCIUM	420	240	450
	CHROMIUM	43	**150**	68
	COBALT	9.5	16	6.1
	COPPER	11J	22J	**180J**
	IRON	17000J	**53000**	**75000**
	LEAD	15J	**75J**	**240J**
	MAGNESIUM	2400	**10000**	4600
	MANGANESE	210	370	310
	TOTAL MERCURY	0.06U	U	**0.18**
	NICKEL	12	**62**	20
	POTASSIUM	2100	7000	5500
	SELENIUM	U	1.5J	2.6
	SILVER	0.55	0.79	**2.1**
	SODIUM	240	140	360
	VANADIUM	47	120	90
	ZINC	31	**980**	**190**
ug/kg	2,4-DINITROPHENOL	U	U	1200J
ug/kg	BIS(2-ETHYLHEXYL PHTHALATE	U	1400J	U
ug/kg	PCB 1254	U	U	390J

Bold numbers indicates elevated levels (> 3X control levels)
U- Not detected
J- Estimated value